flanged beam of uniform section throughout the length, be 38·7 inches, and the depth of the middle part, or that between the flanges 2·5 inches; what weight will it sustain at the middle of its length, supposing it to be supported on two props 36 feet asunder, the whole breadth being 9·3 inches, and the thickness of the middle part 3·1 inches?

Referring to the table opposite 38 inches in the left hand column, and under ·7 at the top, we find the number 569·1222, which being multiplied by 9·3, the whole breadth of the section gives 5292·83646 tons, for the strength of a beam of the given section considered entire, one foot long.

From the whole breadth of the section, subtract the thickness of the middle part, and we get 9·3—3·1=6·2 inches, for the breadth of the section composed of the two portions marked by the letters E and F, of which the depth is 32·5 inches; then opposite 32 in the left-hand column and under ·5 at the top of the table, we get 401·375, which being multiplied by 6·2, gives 2488·525 tons, for the strength of a beam of the section 32·5 by 6·2 inches, and 1 foot in length; but before this strength be taken from that of the whole section previously calculated, it must be reduced in the proportion of the depths; thus we have

38·7 : 32·5 : : 2488 525 : 2089·84657 tons.

Let this therefore be taken from the strength of the whole section, and let the remainder be divided by the length of bearing, and we get (5292·83646 — 2089·84657) ÷ 36=88·972 tons nearly.

And in this way may the strength of any other beam of the same form be calculated; thus avoiding the difficulty incident to the formula and the rule deduced from it; and by reversing the operation, the dimensions may be found to sustain any required load, when certain other dimensions are given. T.

REMAINS OF THE FRANCISCAN FRIARY AT READING.

At the late meeting of the Archæological Institute, Mr. John Billing, architect (of Reading), read a paper on the history and present state of the friary in that town, the interesting ruins of which building are seen on approaching Reading by the railway. The following is the substance of the communication:—

At the north-west extremity of the town of Reading stands what was formerly the house of the Friars Minors. It was a religious foundation of the Order of St. Francis, which was introduced into England in 1224—the eighth year of Henry III.,* and was founded in Reading in 1233.

By a deed, dated that year,† July 14, Adam de Lathbury, then abbot, and the convent of Reading granted to the Friars Minors in Reading "a certain piece of waste grouod near the King's highway leading to Caversham-bridge, containing thirty-three perches in length, and twenty-three in breadth, with a permission to build and dwell there so long as they should continue without acquiring any property of their own;"—but as the deed recites—"if at any time, by any accident, or by any means, it should come to pass that the Friars Minors should have any property, or any thing of their own, they have agreed for themselves and their successors for ever, that it should be lawful for us and our successors, by our own authority, to expel them from every part of our land, without the hinderance of any contradiction or appeal."

Under the same penalty of expulsion, the friars "were bound not to seek any other habitation on any part of the abbey lands; nor to extend the limits of what was already granted them; nor to request any thing but what was gratuitously and spontaneously allowed them; nor to receive any oblations, tithes, or mortuaries due to the abbey. If the friars should be expelled by the monks of Reading Abbey for any other causes than those above-mentioned, it was agreed that they should be reinstated by the King's authority, and enjoy in their own right what had been granted them by the abbey. If the friars should voluntarily relinquish their habitation, the buildings and site of the edifice should belong to the abbey."

* Leland's Collectanea, vol. iii., p. 341.
† Cotton. Library. Vespasian, E. 25.

By a subsequent deed, another piece of ground was granted them, immediately contiguous to the area already occupied by them; the conditions are the same as in the former grant, except the addition of a clause restraining them from interring in their cemetery, church, or any other place, the bodies of the parishioners of the monastery, or of any other of the churches belonging to the abbey in the town of Reading, or elsewhere, without special licence. This deed is dated the 7th before the Kalends of June, in the year 1285.

In 1288‡, Robert Fulco left by will to the Friars Minors in Reading, certain void pieces of ground in New-street, now Friars-street, adjoining to their former possessions. Edward I., in his thirty-third year, 1306, issued a precept to John de London, clerk, constable of his Castle of Windsor, to this effect—"Whereas our beloved and faithful subject, Robert de Lacy, Earl of Lincoln, hath given to our beloved in Christ, the friars minors residing at Reading, fifty-six oaks of the most proper for building timber in his wood of Asherigge, which is within the limits of our forest of Windsor, we command you that you permit the said friars to cut down the said oaks, and carry them wherever they please, and consult their own convenience in the same. Witness, the King at Odyham, the 11th day of January. The buildings for which this timber was required were not completed before 1311, as Alande Bannebury, who died at Reading in that year, bequeathed by will "*operi fratrum minorum*," to the work or building of the Friars Minors, five shillings.

We have no account of the building, nor of the number of the friars who resided in it; from the small extent of the ground, it was neither roomy nor elegant, content, agreeably to the spirit of their order, with the meanest accommodation for themselves, their principal care seems to have been to erect a house of prayer suitable to the religion they professed, which from its being more substantially built is the only part of their possessions which has withstood the ravages of time.

DESCRIPTION OF THE RUINS.

The church as it now stands consists of a nave with north and south aisles. Originally there was a chancel and a tower, as we are informed by Dr. London in a letter to Thomas Lord Cromwell, dated Sept. 17th, at Reading, in the 30th year of Henry VIII., that "as soon as he had taken the friars surrender, the multitude of the poverty of the town resorted thither, and all things that might be had they stole away, insomuch that they conveyed the very *clappers* of the *bells*." All that now remains of the chancel is the arch and pillars, and this is partly bricked up in the wall of an adjoining house. There are no remains of a porch, but it is not probable that so large a church could have been destitute of this essential feature. The south doorway is of two orders, deeply recessed, and consists of a succession of deep hollows with two members of what has been called the "pear-shaped moulding." There are no jamb shafts, but the mouldings continue down the jambs and die away on the plinth.

The walls are built of flint with stone quoins, and plastered inside. Externally the flint work is laid in regular courses and the flints split and squared. The skill and management of the old builders, and the ease with which they made the most rugged materials bend to their purpose, was never better displayed than in the construction of these walls; the thin, narrow joints, sharp surface, and beautiful appearance of the flint work far surpasses the best attempts of modern days, and proves, whatever else the church might have been, that it was at least the school of sound architects and good workmen. The aisles are separated from the nave by a stone arcade of five compartments, the two nearest the chancel being narrower and more acutely pointed than the others. The mouldings of both pillars and arches are very well worked and in tolerable preservation, and belong in common with nearly every other part of the church to the style of architecture prevailing in the early part of the fourteenth century, now perhaps better known as the "Decorated."

The west window is by far the finest part of the whole edifice, and even now, worn and dilapidated as it is, presents a beautiful appearance. The tracery is of a flowing character, simple but elegant, and when the west front was in its original state, the east roof complete, and the lofty tower in the back ground completing the picture, must have been as perfect a composition as any of its kind.

The aisle windows are of three lights with segmental heads; the mouldings are remarkably plain, but in this style we frequently find very beautiful and sometimes intricate combinations of tracery, with but meagre and shallow mouldings; the heads are divided similarly to the west window, feathered and cusped. The label mould to these windows, to the west window and arcades, is precisely the same in contour, differing only in size.

The aisles terminated with the nave, and were pierced with one east window in each; of what kind we can scarcely tell, one end being so completely covered with ivy, that it defies penetration, and the other bricked up, shews nothing but the mere outline of the window, which differs from the aisles, inasmuch as it is longer and acutely pointed. There do not appear to have been any west windows to the aisles. No traces of the floor are visible, neither could we on digging discover any remains of pavement or tiles—the floor probably was taken up when the church was converted into a bridewell, the nave being divided off into airing yards.

It is to be lamented that this fine relic of ancient art is devoted to no better purpose than that of a prison. The present scanty church accommodation would be an ample reason for restoring it to a somewhat more decent state, and as the walls and arches are undisturbed, a small expenditure would render it at once fit for worship and an ornament to the town. As before remarked, the style is "decorated." The building was commenced in the reign of the first Edward, during whose dynasty, and that of the two succeeding monarchs of his name, Gothic architecture having worked itself free from the Norman, and the somewhat stiff though still elegant characteristics of the Early English, attained a degree of beauty and splendour unrivalled either before or since.

After existing for rather more than two hundred years, this friary, in common with the possessions of the monks of this place, fell a prey to the rapacity of Henry VIII., to whom, according to the deed of surrender, bearing the date of September 13th, 1539, the monks gave up the house with all its advantages, and finally relinquished their order.

After the surrender, Dr. London, in a letter to Thomas Lord Cromwell (Sept. 17th), said that the "honest men of Reading" had no place for properly administering justice, and begged that they might have part of the friary for that purpose:—"Ther town hall ys a very small house and standeth upon the ryver wher is the comyn wassching place of the most part of the town, and in the session dayes and other court dayes ther ys such betyng of bateldores as one man cannot hear another, nor the guest here the chardg gevyn. The body of the house of the grey friers, wich is seyld with lath and lyme, would be a very commodious room for them, and now that I have ridden all the fasschen of that church in parceleses, ymages, and awltars, it wold make a gudly town hall. The mayer of that town, Mr. Richard Turner, a very honest gentill p'son, wh many other honest men hath exp'ssyed unto me ther gref in thys behalf, and have desyred me to be an hu'ble sutar unto yor lordeschippe for the same. If it sholde be solde the wallys besyde the coyn stones be butt chalk and flynt and the cov'yring but tile. And if it please the king's gr. to bestow that house upon any of his s'rvants he may spare the body of the church wich standeth next the strete very well, and yet have rowme sufficient for a great man." This application of Dr. London met with success in opposition to a request of his brother commissioner, Richard Pollard, who in a letter dated "Oxon. ultimo Auguste." had thus written to Cromwell:—"A frynde of myne, the warden of the grey friers in Reading, hath also desyred me to be an humble sutar for hym and his brothren, that they may, with your lordeschippes favor, also chainge ther garments with ther papistical manner of livinge. The most part of them be very agede men and be not of

‡ Cotton. Library. Vespasian, E. F. fo. 55,

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